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UNITED STATES DISTRICT COURT
 NORTHERN DISTRICT OF CALIFORNIA
 SAN FRANCISCO DIVISION

RICOH COMPANY, LTD.,

Plaintiff,

vs.

AEROFLEX INCORPORATED, et al.,

Defendants

SYNOPSIS, INC.,

Plaintiff,

vs.

RICOH COMPANY, LTD.,

Defendant

CASE NO. C-03-4669-MJJ (EMC)

CASE NO. C-03-2289-MJJ (EMC)

**RICOH'S SUBMISSION OF DEFINITIONS
 AND CITATIONS TO INTRINSIC
 EVIDENCE FOR TEN CLAIM TERMS FOR
 CONSTRUCTION**

Date: December 15, 2004

Time: 2:30 P.M.

Courtroom: 11

Ricoh hereby submits the attached Exhibit A in response to the Court's Amended Order, dated November 30, 2004. All of the ten terms that the parties have submitted are contained in claim 13 of the '432 patent. In the Exhibit, Ricoh first presents a copy of claim 13 with the terms highlighted; numbers have been inserted to show the order in which the charts address each term. In the charts, Ricoh has presented the term itself, the context in which the term appears, a citation to the intrinsic evidence, and a cross-reference indicating the page of Ricoh's briefs where the term is discussed. In citing to the intrinsic evidence, for the Court's convenience, Ricoh has inserted the quoted portion from the patent after the column and line numbers.

Dated: December 2, 2004

Ricoh Company, Ltd.

By: /s/

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RICOH '432 PATENT CLAIM CONSTRUCTION & SUPPORT (TEN TERMS/PHRASES FROM CLAIM 13)

13. **(1) A computer-aided design process for designing** an application specific integrated circuit which will perform a desired function comprising

storing **(3) a set of definitions of (2) architecture independent actions and conditions;**

storing data describing a set of available integrated circuit hardware cells for performing the actions and conditions defined in the stored set;

storing in an **(4) expert system knowledge base** a set of rules for selecting hardware cells to perform the actions and conditions;

(5) describing for a proposed application specific integrated circuit **a series of architecture independent actions and conditions;**

(6) specifying for each described action and condition of the series one of said stored definitions which corresponds to the desired action or condition to be performed; and

(7) selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit, **(8) said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, (9) a set of cell selection rules** stored in said expert system knowledge base and generating for the selected integrated circuit hardware cells, **(10) a netlist defining the hardware cells which are needed to perform the desired function of the integrated circuit** and the interconnection requirements therefor.

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
(1) A computer-aided design process for designing	A computer-aided design process for designing an application specific integrated circuit . . .	<p><i>During manufacture of a desired application specific integrated circuit (ASIC) chip . . . a process of designing the desired ASIC using a computer.</i></p> <p><u>Support</u></p> <p>'432 Patent:</p> <ul style="list-style-type: none"> • Abstract ("The present invention provides a computer-aided design system and method for designing an application specific integrated circuit which enables a user to define architecture independent functional specifications for the integrated circuit and which translates the architecture independent functional specifications into the detailed information needed for directly producing the integrated circuit."); • column 1, lines 38-44 ("From the structural level design specifications, the description of the hardware components and interconnections is converted to a physical chip layout level description which describes the actual topological characteristics of the integrated circuit chip. This physical chip layout level description provides the mask data needed for fabricating the chip."); • column 2, lines 15-20 ("Thus, the present invention, for the first time, opens the possibility for the design and production of ASICs by designers, engineers and technicians who may not possess the specialized expert knowledge of a highly skilled VLSI design engineer.");

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
		<ul style="list-style-type: none"> • column 3, line 68 to column 4, line 4 (“FIG. 1c illustrates a physical layout level representation of an integrated circuit design, which provides the detailed mask data necessary to actually manufacture the devices and conductors which together comprise integrated circuit.”); • column 5:13-46 (“The KBSC system employs a hierarchal cell selection ASIC design approach, Referring again to FIG. 3, the cells selected . . . are all utilized by the PSCS program 30 to generate the netlist 15. . . . The netlist provides all the necessary information required to produce the integrated circuit. Computer-aided design systems for cell placement and routing are commercially available which will receive netlist data as input and will lay out the respective cells in the chip, generate the necessary routing, and produce mask data which can be directly used by a chip foundry in the fabrication of integrated circuits.”). <p>“computer-aided design”: The use of computers to aid in design layout and analysis. IEEE Standard Dictionary of Electrical and Electronic Terms, Fourth Edition (1988). RCL011382-388 at RCL011384. (Ricoh Opening Ex. 3.)</p> <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 10-12; Ricoh Reply at 4.¹</p>

¹ As used herein the term “Ricoh Opening” refers to Ricoh’s Claim Construction Opening Brief dated August 27, 2004, and the term “Ricoh Reply” refers to Ricoh’s Claim Construction Reply Brief dated September 20, 2004.

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
(2) architecture independent actions and conditions	storing a set of definitions of architecture independent actions and conditions;	<p><i>Functional or behavioral aspects of a portion of a circuit (or circuit segment) that does not imply any set architecture, structure or implementing technology.</i></p> <p><u>Support</u></p> <p>'432 Patent:</p> <ul style="list-style-type: none"> • Fig. 1a; • column 2, lines 6-20 ("In accordance with the present invention a CAD (computer-aided design) system and method is provided which enables a user to define the functional requirements for a desired target integrated circuit, using an easily understood architecture independent functional level representation, and which generates therefrom the detailed information needed for directly producing an application specific integrated circuit (ASIC) to carry out those specific functions."); • column 2, lines 21-24 ("The architecture independent functional specifications of the desired ASIC can be defined in a suitable manner, such as in list form or preferably in a flowchart format."); • column 2, lines 27-34 ("From the flowchart (or other functional specifications), the system and method of the present invention translates the architecture independent functional specifications into an architecture specific structural level definition of an integrated circuit, which can be used directly to produce the ASIC."); <p>"action": A thing done. Merriam-Webster's Ninth New</p>

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
		<p>Collegiate Dictionary (1987). RCL011389-407 at RCL011391. (Ricoh Opening Ex. 4.)</p> <p>“architecture”: A unifying or coherent form or structure. Merriam-Webster’s Ninth New Collegiate Dictionary (1987). RCL011389-407 at RCL011393. (Ricoh Opening Ex. 4.)</p> <p>“independent”: Not dependent; not requiring or relying on something else. Merriam-Webster’s Ninth New Collegiate Dictionary (1987). RCL011389-407 at RCL011394. (Ricoh Opening Ex. 4.)</p> <p>“condition”: Something essential to the appearance or occurrence of something else. Merriam-Webster’s Ninth New Collegiate Dictionary (1987). RCL011389-407 at RCL011405A. (Ricoh Opening Ex. 4.)</p> <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 14-21; Ricoh Reply at 5-8.</p>
(3) a set of definitions of architecture independent actions and conditions	storing a set of definitions of architecture independent actions and conditions;	<p><i>A library of definitions of the different architecture independent actions and conditions that can be selected for use in the desired ASIC.</i></p> <p><u>Support</u></p> <p>‘432 Patent:</p> <ul style="list-style-type: none"> • column 5, lines 20-22 (“The macro library 23 contains a

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
		<p>set of macros defining various actions which can be specified in the flowchart.”);</p> <ul style="list-style-type: none"> • column 7, lines 24-50 (Table 1 showing Macros). <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 16, 22; Ricoh Reply at 5.</p>
(4) expert system knowledge base	<p>storing in an expert system knowledge base a set of rules for selecting hardware cells . .</p> <p>.</p>	<p><i>A database used to store expert knowledge of highly skilled VLSI designers.</i></p> <p><u>Support</u></p> <p>‘432 Patent:</p> <ul style="list-style-type: none"> • column 2, lines 58-63 (“The KBSC utilizes a knowledge based expert system, with a knowledge base extracted from expert ASIC designers with a high level of expertise in VLSI design to generate from the flowchart a netlist which describes the selected hardware cells and their interconnection requirements.”); • column 5, lines 6-8 (“The knowledge base 35 contains ASIC design expert knowledge required for data path synthesis and cell selection.”); • column 11, lines 30-32 (“The rules are stored in a database so that editing capabilities of the database package can be used for rule editing.”). <p>‘432 Prosecution History: By an amendment dated November 15, 1989 (RCL000229-237) (Ricoh Opening Ex. 5) patent claim 13 (application claim 20) was amended to require only</p>

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (<i>in italics</i>) & Intrinsic Support
		<p>a knowledge base: “storing in an expert system knowledge base a set of rules for selecting hardware cells,” (<i>Id.</i> at RCL000232). In contrast, patent claim 9 was amended to expressly require an expert system and an inference engine: “said cell selection means comprising an expert system including a knowledge base containing rules for selecting hardware cells . . . and inference engine means for selecting appropriate hardware cells” (<i>Id.</i> at RCL000231).</p> <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 27-31; Ricoh Reply at 10-11.</p>
(5) describing . . . a series of architecture independent actions and conditions	describing for a proposed application specific integrated circuit a series of architecture independent actions and conditions;	<p><i>A user describing an input specification containing the desired functions to be performed by the desired ASIC.</i></p> <p><u>Support</u></p> <p>‘432 Patent:</p> <ul style="list-style-type: none"> • column 2, lines 6-20 (“In accordance with the present invention a CAD (computer-aided design) system and method is provided which enables a user to define the functional requirements for a desired target integrated circuit, using an easily understood architecture independent functional level representation, and which generates therefrom the detailed information needed for directly producing an application specific integrated circuit (ASIC) to carry out those specific functions.”); • column 2, lines 21-24 (“The architecture independent

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
		<p>functional specifications of the desired ASIC can be defined in a suitable manner, such as in list form or preferably in a flowchart format.”);</p> <ul style="list-style-type: none"> • column 2, lines 27-34 (“From the flowchart (or other functional specifications), the system and method of the present invention translates the architecture independent functional specifications into structural an architecture specific level definition of an integrated circuit, which can be used directly to produce the ASIC.”). <p>“describe”: To represent or give an account in words <~ a picture>; to represent by a figure, model, or picture: delineate. Merriam-Webster's Ninth New Collegiate Dictionary (1987). RCL011389-407 at RCL011398. (Ricoh Opening Ex. 4.)</p> <p>“description”: A descriptive statement or account. Merriam-Webster's Ninth New Collegiate Dictionary (1987). RCL011389-407 at RCL011398. (Ricoh Opening Ex. 4.)</p> <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 32-37; Ricoh Reply at 12-13.</p>
(6) specifying for each described action and condition of the series one of said stored definitions	specifying for each described action and condition of the series one of said stored definitions which corresponds to the desired action or condition to be performed; and	<p><i>Specifying for each desired function to be performed by the desired ASIC one of the definitions of the architecture independent actions and conditions stored in the library of definitions that is associated with the desired function.</i></p> <p>(“specifying”= mapping or associating a desired function to be performed by the manufactured ASIC with a definition from</p>

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
		<p><i>the library of definitions.)</i></p> <p><u>Support</u></p> <p>'432 Patent:</p> <ul style="list-style-type: none"> • column 5, lines 20-22 ("The macro library 23 contains a set of macros defining various actions which can be specified in the flowchart."); • column 7, lines 24-25 ("Edit actions allows the designer to assign actions to each box."); • column 8, lines 23-26 ("The selection is based on functional descriptions in the flowchart, as specified by the macros assigned to each action represented in the flowchart."); • column 9, lines 14-18 ("Rules of the following type are applied during this stage. . . . map actions to macros."). <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 37-39; Ricoh Reply at 13-15.</p>
(7) selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell	selecting from said stored data for each of the specified definitions a corresponding integrated circuit hardware cell for performing the desired function of the application specific integrated circuit, . . .	<p><i>Selecting from the plurality of hardware cells in the hardware cell library a hardware cell for performing the desired function of the desired ASIC.</i></p> <p><u>Support</u></p> <p>'432 Patent:</p> <ul style="list-style-type: none"> • column 8, lines 21-23 ("The Cell Selector 32 is a knowledge based system for selecting a set of optimum

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
		<p>cells from the cell library 34 to implement a VLSI system.”);</p> <ul style="list-style-type: none"> • column 9, lines 21-24 (“The cell selector maps the blocks to cells selected from the cell library 34. It selects an optimum cell for a block.”). <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 42, 45-46; Ricoh Reply at 15-16.</p>
(8) said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed	<p>selecting . . . a corresponding integrated circuit hardware cell . . . , said step of selecting a hardware cell comprising applying to the specified definition of the action or condition to be performed, a set of cell selection rules stored in said expert system knowledge base and generating for the selected integrated circuit hardware cells, . . .</p>	<p><i>Selecting from the plurality of hardware cells in the hardware cell library a hardware cell . . . through application of the rules; and generating a netlist that identifies the hardware cells needed to perform the function of the desired ASIC</i></p> <p><u>Support</u></p> <p>‘432 Patent:</p> <ul style="list-style-type: none"> • column 2, lines 36-39 (“The structural level definition includes a list of the integrated circuit hardware cells needed to achieve the functional specifications. These cells are selected from a cell library of previously designed hardware cells of various functions and technical specifications.”); • column 5, lines 14-25 (“The KBSC system employs a hierarchical cell selection ASIC design approach, as is illustrated in FIG. 4. Rather than generating every required hardware cell from scratch, the system draws upon a cell library 34 of previously designed, tested and proven hardware cells of various types and of various

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
		<p>functional capabilities with a given type.”);</p> <ul style="list-style-type: none"> • column 8, lines 21-23 (“The Cell Selector 32 is a knowledge based system for selecting a set of optimum cells from the cell library 34 to implement a VLSI system.”); • column 8, line 65 to column 9, line 24 (“The knowledge base of Cell Selector 32 contains information (rules) relating to: [listing of exemplary cell selection rules] Rules of the following type are applied during this stage. . . . The cell selector maps the blocks to cells selected from the cell library 34. It selects an optimum cell for a block. This involves the formulation of rules for selecting appropriate cells from the cell library.”); • column 9, lines 21-24 (“The cell selector maps the blocks to cells selected from the cell library 34. It selects an optimum cell for a block.”); • column 13, lines 59-66 (“FIG. 14 shows the result of optimizing the circuit by applying rule 4 to eliminate redundant registers. As a result of application of this rule, the registers R2, R3, R7, R8, and R9 in FIG. 13 were removed. FIG. 15 shows the block diagram after further optimization in which redundant comparators are consolidated. This optimization is achieved in the PSCS program 30 by application of rule 5.”). <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 42-45; Ricoh Reply at 15-17.</p>
(9) a set of cell selection rules	said step of selecting a hardware cell	<i>A plurality of rules for selecting among the hardware cells</i>

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	<p>comprising applying . . . a set of cell selection rules stored in said expert system knowledge base . . .</p>	<p><i>from the hardware cell library, wherein the rules comprise the expert knowledge of highly skilled VLSI designers formulated as prescribed procedures.</i></p> <p><u>Support</u></p> <p>'432 Patent:</p> <ul style="list-style-type: none"> • column 5, lines 25-30 ("Using a rule based expert system with a knowledge base 35 extracted from expert ASIC designers, the KBSC system selects from the cell library 34 the optimum cell for carrying out the desired function."); • column 8, lines 29-30 ("The cell selector uses a knowledge base extracted from VLSI design experts to make the cell selection."); • column 8, line 65 to column 9, line 5 ("The knowledge base of Cell Selector 32 contains information (rules) relating to: (1) selection of macros (2) merging two macros (3) mapping of macros to cells (4) merging two cells (5) error diagnostics The above information is stored in the knowledge base 35 as rules."). <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 28, 31-32; Ricoh Reply at 11-12.</p>
<p>(10) a netlist defining the hardware cells which are needed to perform the desired function of the</p>	<p>a netlist defining the hardware cells which are needed to perform the desired function of the integrated circuit and the interconnection requirements therefor.</p>	<p><i>A description of the hardware components (and their interconnections) needed to manufacture the ASIC as used by subsequent processes, e.g., mask development, foundry, etc.</i></p>

Claim Term/Phrase for Construction (All terms are in Claim 13)	Claim Term/Phrase <u>In Context</u>	Ricoh's Construction (in <i>italics</i>) & Intrinsic Support
integrated circuit		<p><u>Support</u></p> <p>'432 Patent:</p> <ul style="list-style-type: none"> • column 2, lines 42-49 ("The list of hardware cells and their interconnection requirements may be represented in the form of a netlist. From the netlist it is possible using either known manual techniques or existing VLSI CAD layout systems to generate the detailed chip level geometrical information (e.g. mask data) required to produce the particular application specific integrated circuit in chip form."); • column 5, lines 38-46 ("The netlist provides all the necessary information required to produce the integrated circuit. Computer-aided design systems for cell placement and routing are commercially available which will receive netlist data as input and will lay out the respective cells in the chip, generate the necessary routing, and produce mask data which can be directly used by a chip foundry in the fabrication of integrated circuits."). <p><u>Cross-Reference to Ricoh Briefs</u></p> <p>Ricoh Opening at 41-42, 46-47; Ricoh Reply at 17-18.</p>